

Physicochemical and antibacterial assessment of Iranian Propolis

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Abstract

Background: Propolis is one of the useful bee colony products that have been used in traditional medicine for centuries. In this study, the physicochemical characters and their antibacterial effect of Iranian Propolis collected from Qazvin province was assessed.

Methods: In this study, Thin Layer Chromatography and Vacuum Liquid Chromatography to detect different compounds of the extract have been used. In the initial evaluation of Propolis extract, it was found that the extract includes variable compounds with different polarity. Therefore, the initial classification of extract with different polarity solvents was essential. Finally, 0.1 gr hydro alcoholic Propolis was injected to the HPLC by ultrasound. The antibacterial effect of Iranian ethanol extract Propolis was measured using a microdilution method against *Pseudomonas aeruginosa*: *P. aeruginosa* and *Staphylococcus aureus*: *S. aureus* standard strains and the minimum bactericidal and inhibitory concentration were defined.

Results: Primary analysis of the ethanol extract by analytical Thin Layer Chromatography, demonstrated the presence of flavonoid and phenol in it. minimum inhibitory concentration and minimum bactericidal concentration for *Staphylococcus aureus*: *S. aureus* standard strain was 2.5mg/ml. The same procedure was done for *Pseudomonas aeruginosa*: *P. aeruginosa* standard strain and the minimum inhibitory concentration and minimum bactericidal concentration were 50mg/ml of Propolis extracts.

Conclusion: According to the results, the alcoholic extract of propolis from Qazvin province of Iran provides significant antimicrobial activity. Its powerful activity may be due to high total phenolic and flavonoid contents. Functional Foods in Health and Disease 2020; 10(2): 82-94 Page 83 of 94

Keywords: Iranian propolis, Antibacterial activity, Phenolic compounds, Flavonoid compound